National Aeronautics and Space Administration

MARCH 2015

SPACE LAUNCH SYSTEM HIGHLIGHTS

NASA's Space Launch System Booster Passes Major Ground Test

The largest, most powerful booster ever built for spaceflight fired up successfully March 11 for a major-milestone ground test in preparation for future missions to help propel SLS and the Orion spacecraft to deep space destinations, including an asteroid and Mars.

The booster fired for two minutes, the same amount of time it will fire when it lifts the SLS off the launch pad, and produced about 3.6 million pounds of thrust. The test was conducted at the Promontory, Utah, test facility of commercial partner Orbital ATK, and is one of two tests planned to qualify the booster for flight. Once qualified, the flight booster hardware will be ready for shipment to NASA's Kennedy Space Center for the first SLS flight.

Read the full story **here**, and watch a video of the booster test **here**. *(NASA)*

Booster Passes Major Ground Test (cont'd)

(Orbital ATK)

(NASA)

Spaceflight Partners: Moog Inc.

EDITOR'S NOTE: Every month, SLS Highlights turns the spotlight on one of the many industry partners helping to create the largest rocket ever built for human space exploration. In this issue, we profile Moog Inc. of East Aurora, New York.

Moog provides critical control hardware for the SLS, from the core stage to the solid rocket boosters to the interim cryogenic propulsion stage.

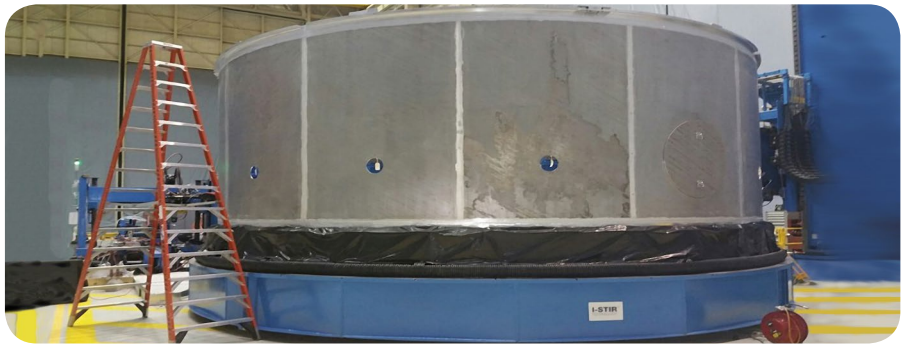
The thrust vector control (TVC) system on the core stage includes eight electrohydraulic actuators and four TVC actuator controllers. The TVC system controls the four main RS-25 engines of SLS as it launches into space. The four engines are former space shuttle main engines that Moog's electrohydraulic TVC systems have successfully supported from development to inaugural launch and through the fly out of the space shuttle.

Each of the two five-segment solid rocket boosters, which provide additional thrust for the first two minutes of flight, are equipped with four electrohydraulic actuators for engine control. Moog also delivers isolation valves for the auxiliary power unit on each booster.

The first two flights of SLS will contain an interim cryogenic propulsion stage based on Boeing's Delta cryogenic second stage used on the Delta IV family of launch vehicles. Thruster valves play a role in the management of the reaction control system on the interim cryogenic propulsion stage. Moog's electromechanical TVC system controlled the RL-10 engine as it boosted the Orion spacecraft to the correct altitude and trajectory needed to check vital systems during Orion's first test flight in December 2014. The RL-10 engine also includes isolation valves for fluid management.

Moog Inc. builds the thrust vector control actuator controllers for the SLS core stage. *(Moog Inc.)*

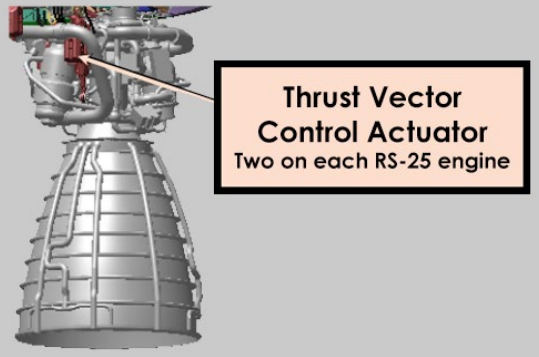
Fabrication Complete on SLS Core Stage Simulator Test Article



Fabrication recently was completed on the core stage simulator structural test article at NASA's Marshall Space Flight Center in Huntsville, Alabama. The hardware is a replica of the top of the rocket's core stage and will be used to ensure the core stage can withstand the weight and loads of the parts of the rocket stacked on top of it. Read the full story **here**. *(NASA/MSFC)*

NASA Shaking Things Up for Space Launch System at Redstone Test Center

Roger Parisa and Miranda Holton, engineers at NASA's Marshall Space Flight Center in Huntsville, Alabama, get the SLS core stage thrust vector control actuator ready for vibration testing. NASA and The Boeing Co., prime contractor for the SLS core stage, recently teamed up for thrust vector control actuator vibration testing with the Redstone Test Center's Dynamic Test Division on Redstone Arsenal in Huntsville. Read the full story **here**. *(NASA/MSFC)*



Location of the thrust vector control actuator on the SLS RS-25 engine. *(NASA/MSFC)*

Read about Orbital ATK's Gordie Russell **here**. *(NASA/MSFC)*

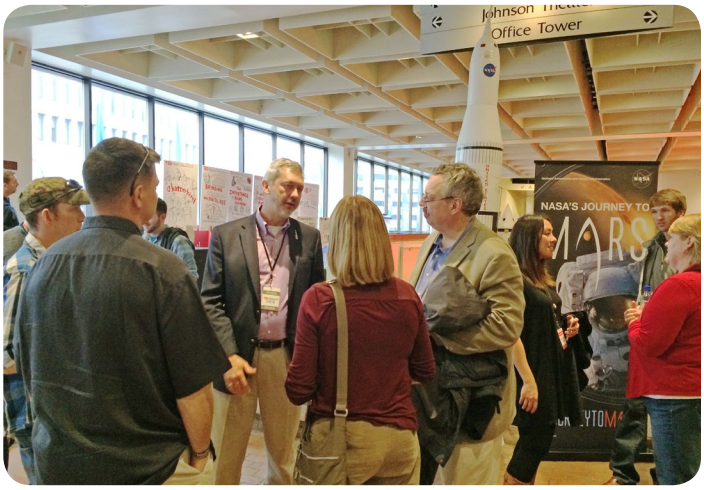
SLS is Fired Up

The SLS team was at the public viewing area March 11 for the SLS booster qualification test in Promontory, Utah. More than 6,500 people came out to watch the firing and learn more about the rocket. *(NASA/MSFC)*

On the Road...

SLS Program Manager Todd May speaks to a packed room March 14 at South by Southwest in Austin, Texas. *(NASA/MSFC)*

The SLS Program's Kimberly Robinson talks about the rocket and the journey to Mars on March 20 at Vanderbilt University in Nashville. *(NASA/MSFC)*



The SLS Program's Chris Crumbly talks to participants about his presentation on the rocket March 21 at TEDx in Nashville. *(NASA/MSFC)*

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